

**RULES
OF
TENNESSEE STATE BOARD OF EXAMINERS
FOR LAND SURVEYORS**

**CHAPTER 0820-3
STANDARDS OF PRACTICE**

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0820-3-.01 APPLICABILITY.

The provisions of this Chapter shall apply to all land surveyors registered pursuant to Title 62, Chapter 18, *T.C.A.*

Authority: *T.C.A. §62-18-106(c). Administrative History: Original rule filed August 15, 1980; effective September 28, 1980.*

0820-3-.02 GENERAL.

- (1) The proper execution of land surveying and mapping procedures and all other details of a land survey shall be the direct responsibility of the registered land surveyor whose seal and signature appear on the map. The fact that a map is accepted by a Registrar of Deeds for recordation in no way relieves such land surveyor of this responsibility.
- (2) Original maps are the property of the land surveyor, unless otherwise specified by written contract; therefore it should be professionally and accurately prepared as a permanent record. After reproducible prints or copies have been made for recordation or other purposes, the map should be carefully preserved with the land surveyor's original field notes, calculations, work sheets, and other project documents.
- (3) The land surveyor may agree with any client to perform a more accurate survey than required by this Chapter.
- (4) Samples of typical maps which represent acceptable practice in various aspects of land surveying may be obtained from the Board upon request.

Authority: *T.C.A. §§ 62-18-105(d) and 62-18-106(c). Administrative History: Original rule filed August 15, 1980; effective September 29, 1980. Amendment filed November 20, 1991; effective January 4, 1992.*

0820-3-.03 DEFINITIONS.

For purposes of this Chapter:

- (1) "land description" means a detailed statement of appropriate information necessary completely to locate, relocate, or define the boundaries of a certain area or tract of land.
- (2) "leveling survey" means a survey involving the control of levels for land areas where a common datum is necessary.
- (3) "plat" means an accurate graphical representation of a finite piece of surveyed land property, including pertinent and important data and information pertaining thereto.

(Rule 0820-2-.03, continued)

- (4) "suburban land survey" means a survey of land which is located within the limits of a city or town.

Authority: T.C.A. §§ 62-2-105(d) and 62-2-106(c). **Administrative History:** Original rule filed August 15, 1980; effective September 29, 1980. Amendment filed November 20, 1991; effective January 4, 1992.

0820-3-.04 NOMENCLATURE.

Unless necessary because of space or other limitations, abbreviations and symbols should not be used in land surveying work. However, when necessary, the following abbreviations and symbols should be employed:

Ac	Acres	DH	Drill Hole
Ang	Angle	or l	Delta Angle of Degl. Angle
Ave	Avenue		At P.I. or Central Angle
Az	Azimuth	DMD	Double Meridian Distance
BM	Benchmark	E	East
CB	Catch Basin	EC	Error of Closure
CC	Calculated Courses	El	Elevations
CF	Curb Face	EP	Edge of Pavement
CH	Chord	Fd	Found
CL	Center Line	Gut	Gutter
CM(N)	Concrete Monument (New)	HWY	Highway
CM(O)	Concrete Monument (Old)	IP (N)	Iron Pipe, New
Cos	Cosine	IP (O)	Iron Pipe, Old
D	Degree of Curve	IR (N)	Iron Rod, New
DB	Deed Book	IR (O)	Iron Rod, Old
Defl Ang	Deflection Angle	L	Length of Curve
Dep	Departure	Lat	Latitude
LC	Long Chord	R	Radius
Mag	Magnetic North	RP	Reference Point
MC	Magnetic Course	RR	Railroad
MH	Manhole	RCP	Reinforced Concrete Pipe
Mi	Mile	Rwy	Railway
MK	Marker	R/W	Right of Way
Mon	Monument	S	South
N	North	Sin	Sine
ND	Nail & Disc	Sp	Spike
NGS	National Geodetic Survey	Sq	Square
P	Page	St	Street
PB	Plat Book	Sta	Station
PC	Point of Curvature	Stk	Stake
Per	Perimeter	T	Tangent of Curve
PK	PK Nail	Tan	Tangent
POC	Point of Curve	TK	Tack
OPT	Point of Tangent	Tr	Track
PRC	Point of Reverse Curvature	Tra	Traverse
PT	Point of Tangency	Vert	Vertical
Pt	Point	W	West
Pvmt	Pavement	Wd	Wood

Metric

A	Area	M	Meter
CM	Centimeter	Mil	Millimeter
Hec	Hectare	Sm	Square Meter
Kilo	Kilometer		

(Rule 0820-2-.04, continued)

Note: When employing abbreviations and symbols, a land surveyor should attempt to utilize those which have become customary in the land surveying practice within the particular geographic region in which the surveyed property is located.

Authority: T.C.A. §§ 62-2-105(d) and 62-2-106(c). **Administrative History:** Original rule filed August 15, 1980; effective September 29, 1980. Amendment filed November 20, 1991; effective January 4, 1992.

0820-3-.05 ACCURACY OF SURVEYS.

- (1) Urban and Subdivision (Category I). For Category I surveys in Tennessee, the angular closure shall not exceed 15 seconds times the square root of the number of angles turned. The linear error of closure shall not exceed 1 foot per 10,000 feet of perimeter of the lot of land (1:10,000). When very small lots of 1 acre or less are encountered, the allowable error shall not exceed 1/10 of a foot of positional accuracy at any corner.
- (2) Suburban and Subdivision (Category II). For Category II surveys in Tennessee, the angular error of closure shall not exceed 25 seconds times the square root of the number of angles turned. The linear error of closure shall not exceed 1 foot per 7,500 feet of perimeter of the lot of land (1:7,500). When very small lots of 1 acre or less are encountered, the allowable error shall not exceed 1/10 of a foot of positional accuracy at any corner.
- (3) All Other Land Surveys (Category III). For Category III surveys in Tennessee, the angular error of closure shall not exceed 30 seconds times the square root of the number of angles turned. The linear error of closure shall not exceed 1 foot per 5,000 feet of perimeter of the lot of land (1:5,000). When very small lots of 1 acre or less are encountered, the allowable error shall not exceed 1/10 of a foot of positional accuracy at any corner.

NOTE: Surveys must meet the minimum accuracy requirements provided above for the category where the survey is located. The category (I, II, or III, as defined above) must be determined by the surveyor to the best of his knowledge and belief at the time of the survey. Nothing in this rule shall preclude a surveyor from using a greater degree of accuracy than that required as a minimum for any category provided above.

- (4) Leveling Surveys.
 - (a) Urban. Leveling employed for commercial, industrial or urban land surveys shall be executed with an error of closure (Y) not to exceed in feet

$$Y = 0.04 \sqrt{M} \quad (M)$$
 (Y equals 0.04 times the square root of M) Where Y = discrepancy in vertical measurement (in feet) and M = distance from datum reference (in miles).
 - (b) Other. Other leveling surveys shall be conducted with an error of closure (Y) not to exceed in feet

$$Y = 0.10 \sqrt{M} \quad (M)$$
 (Y equals .10 times the square root of M) where Y = discrepancy in vertical measurement (in feet) and M = distance from datum reference (in miles).
 - (c) Agreement. Prior to any type of leveling survey, including control for photogrammetric mapping, the land surveyor may determine and set forth in a written agreement with his client the accuracy with which the survey will be conducted and the general procedure to be employed.

Authority: T.C.A. §§62-18-105(d) and 62-18-106(c). **Administrative History:** Original rule filed August 15, 1980; effective September 29, 1980. Amendment filed November 20, 1991; effective January 4, 1992.

0820-3-.06 MAPS AND MAPPING.

- (1) When a land surveyor furnishes a plat, it shall be properly and accurately drawn, and should reveal all of the information developed by and during the survey.
- (2) The size of the map shall be such that all details can be shown clearly.
- (3) All preliminary maps must be clearly marked as such prominently on the face of the map.
- (4) Any lines which are not actually surveyed must be clearly indicated on the map by a broken line and a statement included revealing the source of information from which the line is derived.
- (5) All pertinent information on the plat shall be correctly plotted to the scale shown or noted otherwise. Enlargements of portions of a plat are acceptable in the interest of clarity, where shown as inserts on the same sheet.
- (6) All visible and apparent rights-of-way, watercourses, utilities, roadways, and other such improvements shall be accurately located where crossing or forming any boundary line of the property shown.
- (7) Where data is shown relative to existing utilities not visible to the surveyor, a statement shall be provided on the plat that such data should not be relied upon without verification from the proper utility authority having jurisdiction.
- (8) Area is to be computed by double meridian distance or equally accurate method. Area computations by estimation, by planimeter, by scale, or copying from another source, are not acceptable methods except in preliminary maps, in which case the method will be clearly stated.

Authority: T.C.A. §§62-18-105(d) and 62-18-106(c). **Administrative History:** Original rule filed August 15, 1980; effective September 29, 1980. Amendment filed November 20, 1991; effective January 4, 1992.

0820-3-.07 SURVEY TYPES AND REQUIREMENTS.

A land surveyor shall comply with the minimum requirements provided below for all surveys and plats or maps prepared therefrom.

- (1) *General Property Surveys.*
 - (a) A plat shall be a print or tracing, and shall be stamped or sealed with the surveyor seal and signed by a registered land surveyor.
 - (b) A plat shall have a title and contain the following information:
 1. a descriptive location of the property, or vicinity map, and corner of the property tied by bearing to the nearest minute and distance to the nearest one-tenth of a foot to the nearest road intersection, or to a corner of a subdivision or to a tract from which the property is carved, or to a permanent identifiable corner, or to a nearby permanent identifiable reference point. In the case of a creation of a new tract, a tie must be made by bearing and distance to an identifiable corner of the parent tract;
 2. the city or district, county, and the state where the property is located;
 3. the name of the grantor or grantee of the property, or the name of the person who requested or required the plat;

(Rule 0820-2-.07, continued)

4. the date of the survey or plat;
5. a graphic scale and/or numeral scale;
6. the name, registration number, address and telephone number of the surveyor; and
7. a certification on the face of the plat as to the category of survey and the ratio or precision of the unadjusted survey, which shall state the following:

I hereby certify that this is a category _____ survey and the ratio of precision of the unadjusted survey is 1: _____ as shown hereon.

Surveyor
Tenn. Reg. No.

- (c) The north arrow shall be shown, and shall be correlated with the courses or bearings, with indications as to whether is true, magnetic, grid (indicating source thereof), or is reference to old deed or plat bearings. If the North index is magnetic or referenced to old deed or plat bearings, the date and the source (if known) such index was originally determined shall be clearly indicated.
- (d) All property lines shall be defined by horizontal distances and bearings or sufficient horizontal ties, and shall be plotted to the scale shown in the title block.
- (e) Where a boundary is formed by a curved line, the curve shall be defined by curve data including at least three elements of the curve. When intersecting boundary lines are non-radial or non-tangential, at least the delta angle, radius, and chord bearing and distance shall be shown.
- (f) The land surveyor shall show the widths or center-lines of all easements and rights-of-way which are obvious and apparent to him. The survey shall be made using the latest recorded deed to the property, but shall show any pertinent information, such as easements, joint driveways, etc. of which the land surveyor is advised by the title attorney.
- (g) Boundaries formed by water course shall be located and plotted to the scale shown in the title block. Traverse lines and/or offset lines used to close water course boundaries shall be shown plotted to scale and defined by bearing and distance.
- (h)
 1. All corners shall be established, and shall be metal, concrete, or a natural object.
 2. Metal corners shall be no less than 1/2 inch in diameter; concrete corners shall be no less than 4 inches in diameter; and both shall be no less than 18 inches in length unless some impregnable material is encountered.
 3. The type of corner (old or new) shall be indicated on the plat.
 4. When conditions warrant setting a corner on an offset, the location shall be selected so that the corner lies on a line of the survey, or a prolongation of such line.
 5. All new corners placed shall have a cap or tag or non-corrosive material with the surveyor's registration number or company name stamped.

(Rule 0820-2-.07, continued)

6. In the case of placement of a concrete marker, the marker shall have a permanent mark for the survey point and shall have the surveyors registration number or company name attached or stamped. A notation on the plat shall be made stating whether the corners were found or set, and in addition, the statement shall indicate the material and size of the corner found or set.
 - (i) In the compilation of a composite plat, the land surveyor shall indicate and cite the course of all lines copied from a previous survey on the plat, and qualify the plat (i.e. Plat prepared from deed description only).
 - (j) The names of adjoining land owners and deed references if available at property assessors office, and/or block numbers, and highways, streets, and named waterways shall be shown.
 - (k) The point of beginning in the metes and bounds description prepared by the surveyor shall be shown on the plat of the survey (except in the case of a subdivision plat).
- (2) *Topographic Surveys.*
- (a) A plat shall be a print or tracing, and shall be stamped or sealed with the surveyor seal and signed by registered land surveyor.
 - (b) A plat shall have a title and contain the following information:
 1. A descriptive location of the property or a vicinity map;
 2. The city or district, county, and the state where the property is located;
 3. The name of the grantor or grantee of the property, or the name of the person who requested the plat;
 4. The date of the survey or plat;
 5. A graphic scale and/or numerical scale; and
 6. The name, registration number, and address of the surveyor.
 - (c) The North arrow shall be shown, and shall be correlated with the courses, with indications as to whether it is true, magnetic, or grid.
 - (d) All property lines shall be defined by bearing and horizontal distance and shall be plotted to the scale shown in the title.
 - (e) The land surveyor shall show the widths of all easements and rights-of-way which are obvious and apparent to him. The survey shall be made using the latest recorded deed to the property, but shall show all easements, joint driveways, etc. and any other information (if any) of which the land surveyor may be advised by the title attorney.
 - (f) Boundaries formed by water course shall be located and plotted to the scale shown in the title.
 - (g) The land surveyor shall indicate and cite the source of all lines copied from a previous survey.

(Rule 0820-2-.07, continued)

- (h) The names of adjacent land owners, and deed references if available at property assessors office, and/or block numbers, and highways, streets, and named waterways shall be shown.
 - (i) Surveys shall be referenced to boundary.
 - (j) Physical features such as storm drains, sanitary sewers, power lines, gas lines, water lines, buildings, and water bodies, shall be shown and plotted to the scale shown in the title.
 - (k) Elevations shall be shown as spot elevations and/or contours. The contour interval shall be noted. Ninety percent (90%) of the contours shall be accurate to within 1/2 the contour interval.
 - (l) An on-site temporary bench mark shall be established with reference to datum, assumed or otherwise, and plotted to the scale shown in the title block.
 - (m) The plat shall indicate whether information was derived from random shots, cross sections, grid cross section, plain table, transit-stadia field survey, aerial flight, radial, or blown-up coast and Geodetic maps.
 - (n) On site information and off-site information, including the limits, shall be requested by client in writing.
 - (o) The registered surveyor in responsible charge of the ground control shall sign and seal the plat for the ground control portion of the survey.
- (3) *Oil and Gas Well Locations Surveys.*
- (a) Oil and gas well location surveys must be made in compliance with the provisions of T.C.A., Title 60, Chapter 1, and the rules of the Tennessee State Oil and Gas Board (Chapters 1040-1-1 through 1040-8-1) and where property lines or areas must be located or calculated, must also comply with the accuracy standards set out in rule 0820-3-.05 of this Chapter for the category in which the property is located.
- (4) *Global Positioning Systems (GPS) Surveys.*
- (a) All GPS surveys must be made in accordance with the Federal Geodetic Control Standards (F.G.C.S.). Horizontal and vertical control work must meet or exceed those accuracy specification standards as published by the Federal Geodetic Control Committee, September 1984, in the bulletin titled "Standards and Specification for Geodetic control Networks" or any subsequently published bulletins modifying such class standards. Copies of said bulletins may obtained from the United States Department of Commerce.
 - (b) The class of control surveys shall be shown on documents prepared.
 - (c) The registered surveyor in responsible charge of such GPS survey shall certify, sign, and seal the prepared documents.
- (5) *(Reserved)*
- (6) *Hydrographic Surveys.*

(Rule 0820-2-.07, continued)

- (a) Hydrographic surveying is the term applied to the process used in surveying any body of water. In the case of lakes and rivers this may include the determination of shore lines, soundings, characteristics of the bottom, location of buoys, etc.; the survey of a river may also include the determination of the velocity and characteristics of the flow. In its broad sense the term may be applied to the survey of drainage areas and proposed reservoirs for the storage of water.

Hydrographic maps shall be prepared as follows:

1. The plat or map shall be a print or tracing, and shall be stamped or sealed with the surveyor seal and signed by the registered surveyor in responsible charge of the survey.
2. The plat or map shall have a title and contain the same information as normally would be required under this chapter for topographic surveys.
3. In addition to the above required data, the plat or map shall show the shore line, designated with the heaviest line on the map, and the low-water line designated with the next heaviest line on the map.
4. Topography to be shown outside the shore line shall be determined by the use for which the map is intended, and requested in writing by the client. Topography of the submerged portions shall be shown with a dashed line.
5. Hydrographic charts prepared for purposes of navigation shall include sufficient topography to show the location of any landmarks which may be of use to the navigator, such as conspicuous objects on the shore.
6. Sufficient survey control points shall be shown on the plat or map in order for the survey to be tied to other maps or adjacent surveys.
7. Where soundings are represented on the map they shall be shown in feet and tenths in black, the number representing the depth of the water below the datum. Where the datum is mean low water, these soundings which are below shall be shown in black, and those that are above the datum shall be shown in another color or method of line designation.
8. In the preparation of the navigation chart of a small river the soundings shall be recorded in feet and tenths, and contours drawn every three (3) or six (6) feet. The direction of the current shall be shown with an arrow. Rapids or waterfalls shall be shown on the map when encountered in the survey.

- (b) Hydrographic surveys must conform to the above minimum standards if no other more stringent standards or specifications are provided by the client, or other standards are required by the jurisdiction of the U.S. Corp of Engineers, or other legal authority, in the area where the survey project is located.

Authority: T.C.A. §§62-18-105(d) and 62-18-106(c). **Administrative History:** Original rule filed August 15, 1980; effective September 29, 1980. Amendment filed November 20, 1991; effective January 4, 1992.

0820-3-.08 MARKING OF PROPERTY BOUNDARIES.

The proper marking of boundary lines in a survey shall be the responsibility of the registered surveyor who performs the survey.

- (1) In wooded areas when boundary lines are required to be marked, the following procedures are recommended.
 - (a) A living corner tree shall be marked with an X and 3 hacks or chops.
 - (b) A corner witness tree shall be marked with a 3 hacks or chops.
 - (c) A side line tree shall be marked with a blaze mark on the side of the tree quartering toward the line. (No side line tree shall be marked more than 5 feet either side of the property line.)
 - (d) A property line or center-line tree shall be marked with 1 blaze and 2 hacks or chops, at points where the line enters and leaves the tree.

NOTE: Established local custom may be used in lieu of the procedures recommended above.

- (2) In open land where boundary lines are required by the client to be permanently marked, the following shall apply:
 - (a) Where corner markers are too distant to be seen point to point, iron pins or other permanent markers shall be placed in the boundary line at points where they may be seen from either the corner mark or another iron pin in the line.
 - (b) Line points as required in (a) shall be noted on the plat of the survey stating the approximate location, material, and size of the line marker placed. In open land where boundaries are required to be temporarily marked, wood stakes may be placed along the line at convenient points, however said stakes shall be clearly marked "PL" or "Property Line."

Authority: T.C.A. §§62-18-105(d) and 62-18-106(c). **Administrative History:** Original rule filed August 15, 1980; effective September 29, 1980. Amendment filed November 20, 1991; effective January 4, 1992.

0820-3-.09 LAND DESCRIPTIONS.

- (1) Terminology. The following terminology shall be used in land descriptions:
 - (a) "beginning" means a well-defined, readily located and permanent point or monument which is both the starting point and final point for a metes and bounds description.
 - (b) "boundary line" means an adequately dimensioned and described line (which may be straight, irregular, circular or spiral) bounding an area or dividing separate properties.
 - (c) "conveyance" means the act of transferring title to or rights in a property.
 - (d) "coordinate description" means a description of lands in which the angle points or other points in the boundary are each referred to grid coordinates on the Tennessee or similar coordinate system.
 - (e) "description by lot number" means a description which identifies a lot or tract of land by reference to book and page numbers of a register in which a plat is recorded with other pertinent information.

(Rule 0820-2-.09, continued)

- (f) "grantor" means a person or party conveying property or rights therein to a grantee.
 - (g) "grantee" means a person or party receiving title to or rights in property.
 - (h) "grid coordinates" means distances measured at tight angles to each other in a rectangular system having two base lines at right angles to each other.
 - (i) "metes and bounds description" means a description in which the boundary lines starting from a given point are described by listing the direction, distance and description of corners of the lines forming the boundary.
 - (k) "title" means a written claim or right which constitutes a just and legal cause of exclusive possession.
- (2) Preparation. The land surveyor may prepare the land description in a land survey, but shall not engage in the writing of a deed. In the certification of a land description, the land surveyor shall include on the document, his full name and signature, his registration number and seal and the date of the survey from which the information was procured (or the book and page numbers of the recorded map or deed, if used in preparing the description.)
- (3) Content.
- (a) In the description of a lot located in a subdivision by number, the following information shall appear: the name of the subdivision; the plat or map referred to; the land surveyor's name; the district and county and/or township; the general location of the property and the book and page numbers of the register in which the lot is recorded.
 - (b) A metes and bounds description shall include the general location of the tract or lot with sufficient accuracy so that the tract can be readily located on the ground. The beginning point must be so selected that it can be readily and accurately located from some previously established monument, corner or record, and can be readily described.
- The description shall include the names of adjoining property owners on all lines and at all points. The monument or marker at each corner shall be described.
- A metes and bounds description shall describe a course around a tract or lot in a clockwise direction. All lines adjacent to street, roads or other rights-of-way shall be referenced to same; and all pertinent distances and curve data shall be listed. All corners falling in roads or other inaccessible locations shall be referenced to nearby and permanent points. All rights-of-way crossing the property shall be indicated.

Authority: T.C.A. §§62-18-106(c). **Administrative History:** Original rule filed August 15, 1980; effective September 29, 1980.

0820-3-.10 INSTRUMENTS AND APPARATUS.

- (1) Land surveying in Tennessee shall be conducted in the field with a properly adjusted instrument appropriate to the closeness of the work being performed. The instrument shall be tested at regular intervals and adjusted to maintain its optimum accuracy.
- (2) All tapes shall be of alloy or carbon steel and shall be calibrated or certified as U.S. Bureau of Standards quality with a known coefficient of temperature and tension corrections and graduated in feet and decimal parts of a foot. The land surveyor shall be responsible for any errors which

(Rule 0820-2-.10, continued)

may enter into his survey as a result of the use of spliced tape. Plastic and metallic tapes shall be used within their limitations as specified by the manufacturer.

- (3) The use of electronic surveying equipment is recommended.

Authority: T.C.A. §§62-18-105(d) and 62-18-106(c). **Administrative History:** Original rule filed August 15, 1980; effective September 29, 1980. Amendment filed November 20, 1991; effective January 4, 1992.